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# Marine environment, marine resources and sustainable use: implementing the ecosystem approach

## Submitted by the delegation of Norway

### 1. The ecosystem approach to management — implications and challenges

1. It is widely recognized that an integrated ecosystem approach to management is needed to conserve marine biological diversity and its intrinsic value.

2. The ecosystem approach is the primary framework for action under the 1992 Convention on Biological Diversity. At its Fifth Meeting, the Conference of the Parties to the Convention endorsed a description of the ecosystem approach and operational guidance for its application, and recommended the application of the principles of the ecosystem approach (decision V/6).

3. The Conference of the Parties describes the ecosystem approach as a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help in reaching a balance of the three objectives of the Convention. It is based on the application of appropriate scientific methodologies focused on levels of biological organization, which encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems.

4. The International Council for the Exploration of the Sea has defined the ecosystem approach as the integrated management of human activities based on knowledge of ecosystem dynamics to achieve sustainable use of ecosystem goods and services, and maintenance of ecosystem integrity.

5. A conceptual framework for the ecosystem approach was agreed at the Fifth North Sea Conference in 2002. The framework includes the development of policy and environmental goals, best use of available scientific and technical knowledge, best use of scientific advice, integrated expert assessment, coordinated and

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integrated monitoring, involvement of all stakeholders, and control and enforcement.

6. Section IV of the Plan of Implementation of the World Summit on Sustainable Development refers to decision V/6 of the Conference of the Parties to the Convention on Biological Diversity and states that actions are required at all levels to

> "Encourage the application by 2010 of the ecosystem approach, noting the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem and decision V/6 of the Conference of Parties to the Convention on Biological Diversity;"

and

> "Assist developing countries in coordinating policies and programmes at the regional and subregional levels aimed at the conservation and sustainable management of fishery resources and implement integrated coastal area management plans, including through the promotion of sustainable coastal and small-scale fishing activities and, where appropriate, the development of related infrastructure".

7. Section IV also calls for promotion of "integrated multidisciplinary and multisectoral coastal and ocean management" and recommends strengthening "regional cooperation and coordination between the relevant regional organizations and programmes", including regional fisheries management organizations. In referring specifically to actions required to promote sustainable fisheries, the Plan of Implementation emphasizes the importance of developing "diverse approaches and tools, including the ecosystem approach".[1]

8. The outcomes of the World Summit on Sustainable Development were welcomed and reconfirmed by the General Assembly in its resolutions 57/141, 57/142 and 57/143 of 12 December 2002. Given the short time horizon of many of the targets set in those, we must now address a range of issues with some urgency. The first of these is to establish what the ecosystem approach means in operational terms. An important step here is to identify the institutional requirements for implementation and how those requirements can be met in both industrialized and developing countries.

9. Implementing an ecosystem approach to oceans management will have consequences for management institutions and may require normative, cognitive and regulatory changes.

10. One of the normative changes may be the inclusion of multiple new objectives for management. Both management objectives and operational environmental objectives must be developed, based on the best use of available scientific knowledge and expert advice. New types of knowledge, relating both to the resources for immediate utilization and to the functioning of other biota and ecosystems, need to be included in the basis for management decisions. Regulatory changes may also be required.

11. At the Fifth North Sea Conference, the importance of developing a coherent and integrated set of ecological quality objectives for delivering an ecosystem approach was stressed. A first set of such objectives has been developed for the North Sea, using the methodology developed by the 1992 Convention for the

Protection of the Marine Environment of the North-East Atlantic (OSPAR Convention).

12. One of the institutional implications is that processes must be developed to reconcile multiple and often conflicting objectives. Mechanisms are needed that will enhance cooperation and coordination between different sector policies. These must be based on inclusiveness and the participation of many types of stakeholders. Other institutional implications are that decision-making processes must be able to handle uncertain and complex information and that the regulatory framework for implementation must be adaptive.

13. These institutional implications mean that all countries — industrialized and developing countries alike — will be on a steep learning curve in the development of the ecosystem approach.

14. There is clearly a need to clarify the objectives of ecosystem management based on recognition of the principle of the conservation and sustainable use of marine living resources and the principles set out in decision V/6 of the Conference of the Parties to the Convention on Biological Diversity.

15. There is no single formula for how to implement the ecosystem approach. Solutions must be adapted to local, national, regional or global conditions as appropriate.

## 2. The knowledge base for an ecosystem approach to the management of human activities

16. An ecosystem approach requires expansion of the types of functions and processes that must be considered in management decisions. Both the 1982 United Nations Convention on the Law of the Sea and the 1995 United Nations Straddling Fish Stocks Agreement require conservation and management measures to be based on the best scientific evidence available. According to article 5 of the 1995 United Nations Straddling Fish Stocks Agreement, parties shall also include ecosystem considerations in conservation and management measures for straddling fish stocks and highly migratory fish stocks. The purpose of including ecosystem considerations in fisheries management is to contribute to long-term food security and to human development and to ensure the effective conservation and sustainable use of the ecosystem and its resources. In addition, the Reykjavik Declaration on Responsible Fisheries in the Marine Ecosystem affirmed that:

> "incorporation of ecosystem considerations implies more effective conservation of the ecosystem and sustainable use and an increased attention to interactions, such as predator-prey relationships, among different stocks and species of living marine resources; furthermore that it entails an understanding of the impact of human activities on the ecosystem, including the possible structural distortions they can cause in the ecosystem".[2]

17. If we are to improve our understanding of marine processes and ecosystems, more effort should be invested in improving international scientific cooperation and, through such cooperation, the basis for reaching consensus on joint management decisions. Even with better knowledge, our understanding of the dynamics of the marine ecosystem may be limited. We therefore need to be able to trace the developments and changes that take place in an ecosystem. This can be done by establishing a set of indicators that represent ecosystem health without pretending to

grasp all the details or capture all possible outcomes. Work is in progress in various forums to identify such indicators, but even with the current legal framework and level of knowledge, the ecosystem approach can be implemented.

## 3. Implementation of the ecosystem approach

18. Implementation of ecosystem management will require two main forms of change. First, we must ensure user input, both in terms of defining objectives and in terms of identifying, assessing and accepting the knowledge base for management decisions. Secondly, implementation must be based on an adaptive approach. This is recognized in decision V/6, which states that:

> "The ecosystem approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning. Ecosystem processes are often non-linear, and the outcome of such processes often shows time lags. The result is discontinuities, leading to surprise and uncertainty. Management must be adaptive in order to be able to respond to such uncertainties and contain elements of 'learning-by-doing' or research feedback. Measures may need to be taken even when some cause-and-effect relationships are not yet fully established scientifically."

19. Norway is now in the initial phase of implementing an ecosystem approach to the management of human activities in the Barents Sea. Scientific knowledge about the ecosystem and the effects of human activities are being collected and assessed. This will form the basis for the development of an integrated management plan for the Norwegian part of the Barents Sea.

20. Likewise, the implementation of an ecosystem approach is now being discussed within the framework of the OSPAR Convention.

21. The emphasis on process is also the basis for the technical guidelines on an ecosystem approach to fisheries, which are currently being finalized by the Food and Agriculture Organization of the United Nations. The guidelines recognize the lack of experience of implementation and are intended to start a process of learning based on best practices by suggesting some methods, approaches and controls, rather than by defining universal solutions.

## 4. Developing countries and the implementation of the ecosystem approach

22. The development and implementation of the ecosystem approach constitute a challenge to all countries and to the international community. However, the challenge is greatest for developing countries, where ecosystem management must in many cases be implemented by government and civil society institutions with limited capacity in terms of finances, organization and human resources. Fisheries are at the same time an important economic activity for food and income. Limited institutional capacity may put short-term pressures on management systems and also raises longer-term concerns in relation to the need to maintain a basis for sustainable livelihoods.

23. Under these conditions there may be little room for experiment, and it may be difficult for Governments or local communities to see how the international agendas expressed in the Convention on Biological Diversity and the Johannesburg Declaration on Sustainable Development reflect needs in the local context.

24. It is crucial to develop approaches that make it possible to implement an ecosystem approach based on specific local conditions and local capacities.

25. The conclusions above suggest a way forward for developing countries. Developing countries in particular need to develop objectives that promote both conservation and sustainable use based on the principle of sustainable development, since they may not be in a position to afford the luxury of ignoring the utility aspect of marine ecosystems. Both developing and industrialized countries must accept that management decisions can also be based on soft predictability. This opens the way for wider participation and for approaches to the identification of knowledge that may be better adapted to conditions in developing countries — knowledge that may be less costly to produce and that may utilize and integrate both research-based knowledge and local knowledge. In many cases, developing countries may even be better prepared than industrialized countries to implement an adaptive, learning approach to management because this has been the only option available so far in a situation where the resources available are very limited.

26. But the development and implementation of an ecosystem approach to management will still be a major challenge for developing countries. The answer is not to wait for experience from elsewhere but to develop specific solutions adapted to the local context. Two types of linkages need to be developed.

27. One type relates to objectives: global agendas must be linked to local needs. Management objectives are a matter of societal choice. Which concerns in local communities are addressed through ecosystem considerations, and how can they be addressed within local (national and community) capacities and in a way that benefits the local community?

28. The other type of linkage relates to knowledge and implementation: knowledge about ecosystem functioning must be developed in concert with institutional arrangements for implementation through an adaptive framework. The challenge here is to identify knowledge that is relevant for both present needs and future sustainability and that is useful within the local management institutions. What indicators of the health of an ecosystem and of sustainable use can be observed, given local capacities, and are accepted as valid guides for decisions by stakeholders? How is it possible to develop management institutions that can utilize such indicators in a learning process to meet present needs without compromising long-term sustainability?

29. These are important challenges, and there is a case for international assistance to developing countries to enable them to make these linkages in developing and implementing an ecosystem approach to management. There are now increasing numbers of proposals for approaches at the general level. The time is ripe for the next step. We must develop local management institutions working with balanced objectives that are of local relevance and are based on knowledge that is relevant in the local context, and thus supports an adaptive management system.

30. This can be done by providing assistance in the implementation of ecosystem management in specific cases, and by collecting information and disseminating experience to other countries or areas. The cases chosen should cover a variety of pressures that developing countries must deal with in managing human activities, and a variety of situations where implementation modes for an ecosystem approach need to be developed. In one type of situation, local pressures on coastal ecosystems

arise as fishing methods are improved, fishing effort is increased and aquaculture is developed, or when the ecosystem is used for other purposes such as tourism or infrastructure development. It is also important to gain experience of situations where there are larger-scale pressures such as those exerted by distant-water fleets. Here, the responsibility for ensuring that the harvest is sustainable rests in principle with the coastal States, but they may not have sufficient institutional capacity to ensure sustainability. What we need to do in these cases is to develop mechanisms for sharing the responsibility and accountability for sustainable use.

*Notes*

[1] Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August-4 September 2002 (United Nations publication, Sales No. E.03.II.A.1 and corrigendum), chap. I, resolution 2, annex, paras. 30 and 32.

[2] E/CN.17/2002/PC.2/3, annex, sixteenth preambular para.